

# OVERVIEW OF EUROPEAN LTER COMPONENTS

LTER in Europe, comprises three main inter-linked components: the LTER-Europe network of national networks, projects such as the eLTER H2020 project 2015-2019, and the eLTER ESFRI process that is working to establish the centrally-managed eLTER Research Infrastructure.

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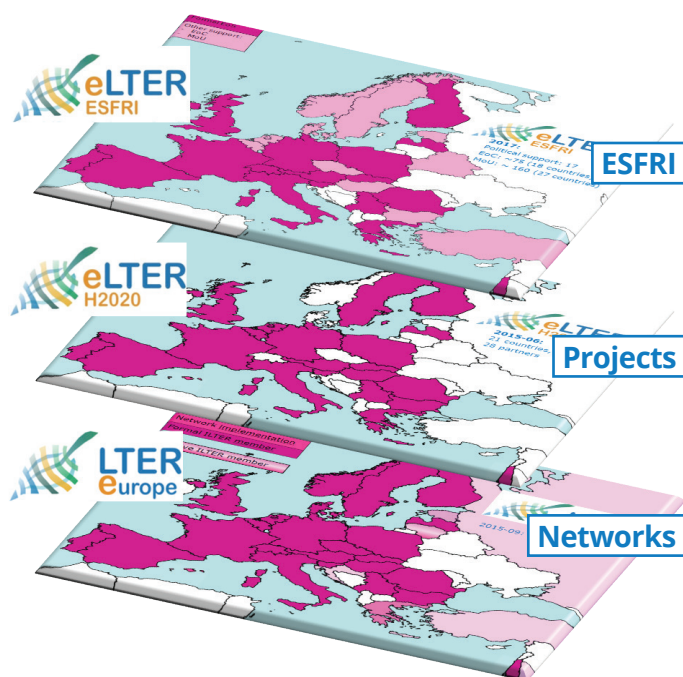
Long-Term Ecosystem Research (LTER) is an essential component of worldwide efforts to improve our knowledge of the functioning of ecosystems and of their long-term response to environmental, societal and economic drivers. LTER contributes to the knowledge base informing policy and to the development of management options in response to the Grand Challenges<sup>06</sup> under Global Change. European LTER currently includes three main components: the LTER-Europe network, R&D projects, and the eLTER ESFRI Process. LTER-related projects and infrastructure developments start with a lower case “e” in the acronym.

## LTER-Europe network

*A permanently networked pools of sites, scientists and research institutions*

LTER-Europe<sup>02</sup> is the formal European regional group of the global ILTER network. It is a distributed network of research sites for multiple purposes in the fields of ecosystem, critical zone, and socio-ecological research. LTER-Europe was formally founded in 2007 and currently (2019) comprises 26 national site networks, 450 LTER Sites and 35 LTSER Platforms where long-term interdisciplinary research and observation is carried out.

The LTER-Europe pool of in-situ facilities and community is involved in numerous networking activities for a huge scientific community. LTER-Europe provides a framework for project development, conceptual work, education, exchange of know-how, communication and institutional integration.



The LTER-Europe network of national networks (bottom), provides a pool of around 450 LTER Sites and 35 LTSER Platforms for eLTER related R&D projects (center) and as basis for the eLTER Research Infrastructure (top)

## LTER-related R&D projects

### *Working engines to further develop LTER in Europe*

Many developments within European LTER have been achieved through EU-funded projects, including ALTER-Net, LIFE+ EnvEurope and ExpeER. The recently-completed four year Horizon 2020 INFRAIA project eLTER H2020 (European Long-Term Ecosystem and Socio-Ecological Research Infrastructure)<sup>05</sup>, started in June 2015 was a flagship project enabling the further

development of the European Long-term Ecosystem Research infrastructure and community. Within eLTER H2020, LTER-Europe collaborated with Critical Zone Observatories (CZO) projects to achieve integration.

The specific role of eLTER H2020 was to catalyse conceptual and service

developments of a distributed, highly integrated and widely used eLTER Research Infrastructure to support a broad range of ecosystem, critical zone and socio-ecological research questions. During the project, 158 sites in 21 countries provided data on long-term trends in environmental change. Scientific test cases using these data addressed a range of environmental and social issues to foster innovation in network level services and steer conceptual progress. The project included a Transnational Access (TA) scheme, offering free-of-charge opportunities for multinational teams of researchers or for individual researchers to visit selected LTER and CZO Sites for the purpose of small to medium scale ecological and socio-ecological research projects. Two new H2020 projects (eLTER PPP and eLTER PLUS) were started in 2020 to organize the eLTER ESFRI process (PPP) and link it closely to scientific and other requirements (PLUS).

## eLTER ESFRI Process

### *Developing the eLTER Research Infrastructure (eLTER RI)*

ESFRI, the European Strategy Forum on Research Infrastructures, aims to develop the scientific

### Development of eLTER RI is supported by:

- 19 country-level political Expressions of Support
- 80 Expressions of Financial Commitment from 18 countries
- 160 Memoranda of Understanding from research organisations in 27 countries.

integration of Europe and to strengthen its international outreach, through the coordinated development of major research infrastructures. The eLTER Research Infrastructure (eLTER RI)<sup>16</sup> was accepted onto the 2018 ESFRI Roadmap in the autumn of 2018, paving the way for its further development and formalisation as a sustainable Research Infrastructure. This work builds on endeavours such as the eLTER H2020 project and draws from the extensive pool of the in-situ LTER infrastructure of the LTER-Europe network.

eLTER RI will be open for researchers and other users, and will offer a wide range of services, such as access to sites, data, tools and training, through a single access point. It will comprise carefully selected terrestrial, freshwater and transitional water sites. The RI will allow in-situ, co-located acquisition of Essential Variables ranging from geochemical to biodiversity and socio-ecological data and will adopt a whole system approach to observe and analyse the environmental system, including understand the human component of ecosystems. While several existing environmental RIs focus on impacts of climate change and/or other elements of environmental change, eLTER RI will be the only research infrastructure embracing holistically the integrated impacts of such stressors on a wide variety of European benchmark ecosystems.

eLTER encompasses LTER-Europe, a community of national long-term ecosystem research site networks, as well as major projects to develop eLTER RI, a whole ecosystem European Research Infrastructure under the ESFRI framework

### eLTER H2020

- 4 year project (2015-19)
- 27 partners from 21 countries
- €5 million EU funding.

### Integrated European Long-Term Ecosystem, critical zone and socio-economical systems Research

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